A short Accompt of the first Motives and Reasons for the Milld Lead-Sheathing, its Excellency above Iron, prov'd to be False and Groundless, upon old Evidence newly produced and never till now Answer'd by the Commissioners of the Admiralty against it upon that account only, which Reply was Pen'd by Secretary Pepys in the the Year 1691 for publick Satisfaction, and several Papers since, Published by Mr. [illegible] ing the Goodness of their Sheathing against the Idle Stories of the Shipwrights and their Friends, view'd, and the Truth appear to all the World; but none ever Answer'd, as well knowing what t

THE Sheathing our Ships with Deal-Boards against the Worm, and large Iron Nails to [illegible] Seams, hinderance to Sailing by its thickness and greater fouling, dearness to Owners a[illegible] Worm to feed on for a Voyage or sometimes two) and also from the great loss to the Public this Service, as well asothers, lay a Drugg in our own Mines.

These Considerations put the Inventors upon the Thoughts of Improving our Sheet-Lead, which they consider'd would be much better for all purposes where Sheet Lead had been us'd, Ships; this way of Milling rendring the Sheet more solid, smooth and exactly equal, which C[illegible] on, (which Iron, daily Experience shew'd us would quickly eat its head through, tho' the Shipwr[illegible] mix'd Mettle for their Nails, which they found was free from Corrosion and everywise agreeab[illegible] Cast in Sand) not easily drawn, when once driven, and driving them an Inch and half distance, and could not touch, it must answer all the ends of Sheathing, without any of the Evils the other was [illegible] that were Sheathed therewith, and half a Score Merchant-Men since, to the great Satisfaction of Prejudice and private Interest does by powerful Enemies in Post Obstruct its Progress.

This Invention being propos'd to King *Charles* II who was well known to have great Judgment and and was very impatient till the thing was put in Practice in his Navy, which was begun in the Year 16[illegible] jections or Surmises rather against it; that the Nails were too short, that the Sheathing would rub off by [illegible] tion agreed the Rates, but forbore entering into any Contract, till by Experience they had made full Tri[illegible] turned Home, and themselves at length fully satisfy'd therein, and approving of its Excellency in preferen[illegible] into a Contract with them for 20 yea s to come, to secure the Benefit thereof to His Majesty at the Rates ag[illegible] that they did it *Upon sufficient Proof and Experience of the goodness and usefulness of the Invention of Milld Lead*.

One would have thought that this Lead-Sheathing had now been Establish'd in the Navy, and all further [illegible] the Kings Work, fearing (as they had reason) that this Preamble and Contract would soon bring the Lead-Shea[illegible] very profitable part of their Trade lay) began to spread Amusements, that a new Discovery had been made, that [illegible] and Decay the Bolts and Ruddar-Irons, which sometime afterwards those Commissioners of the Navy seem'd to [illegible] great difficulty for the Shipwrights to procure; it was but to convey Instructions to their Brethren on Board the [illegible] they were much eaten, and more perhaps than some within view upon other Ships that had been longer on; some never saw the like before upon any other Ship, boldly asserting it must be from the Lead-Sheathing; this being the [illegible] ingly; but these Complaints with Rational, Unprejudiced, and Impartial Men, prove nothing against common Sen[illegible] cular Survey of the *Henrietta*'s Ruddar-Irons at the Navy Office, the Milld Lead Company being present, as in *p*[illegible] had fully Satisfied them, but it seems it did not.

For that no notice being taken thereof, and this Suggestion of the Lead-Sheathings eating of the Ruddar [illegible] mongst other expedients to find out the truth thereof, and to prevent the ill Consequents if any truth were in it, as in [illegible] of the Admiralty) as a most certain way to discover the Truth in this matter; That if they pleas'd to Order an Accom[illegible] cay'd, or Shifted upon all the King's Ships from the time of their begining to Sheath with Lead; and if it did not appe[illegible] with another, they would give up the Cause, which could not reasonably be refus'd, and was agreed to, as a certain w[illegible] their Orders to the several Yards accordingly, as in *pag.* 33, and which fairly tried must then have determined the Matt[illegible] might have excused themselves as misinform'd, and adhered to their own Act and Declaration after 5 years Experience, had been any thing in't, with much more Honour to their Reputation, and great Ability to Judge in these Matters, wh[illegible] the K. above a Hundred thousand Pounds in the Navy, and the Kingdom above a Million in their Pockets long ago, Lords of the Admiralty in 1682, under pretence of Care, totally to lay aside the further use thereof in the Navy [illegible]

But this first Return which was made from *Debtford* Yard appearing too full of variety and different duration to [illegible] ing to them, that the Ruddar-Irons were so confounded with the other Iron-work, that no particular Accompt co[illegible] a Copy thereof was obtain'd, and is here Printed; which if disown d, the Dates may still direct the Store-keeper to [illegible]

Now this Suggestion of the Lead-Sheathings eating the Ruddar-Irons is by this Return from *Debtford* Yard alon[illegible]

1. That there is no Instance therein of any one Sett of Ruddar-Irons mended or shifted together, as doubtless m[illegible]
2. That the cause of the Iron-works sooner or later Decay must be granted to proceed from *without* or from [illegible] the variety of Causes that are from *without* (the Water being common to all) they must from each particular kind, [illegible] selves and equal as their Causes are: But it is apparent from this Accompt of 71 Ships, and known to all that are [illegible] of any one Ship was equal, nor so much as the Members (Pintels, Gudgeons, Braces or Bolts) of the same Rudd[illegible]

3. Therefore since this great variety of Decays happen where the Causes from *without* are uniform, equal, and co[illegible] the Iron it self, and there indeed may be found all the various Causes of these various Effects. The Smith makes [illegible] he mixes and welds together according to his Skill and Honesty; the more he works and with Fire and Hammer [illegible] Customer will be e're he comes again; But if the Smith were never so Honest and Skilful, it is impossible for him [illegible] the Barrs themselves, the Mixing, Welding, Fire, and the force and number of Strokes, to be all equal and alike [illegible]

Now since it appears by the Complaints in the Report it self, that the Decays of the Bolts and Ruddar-Irons of [illegible] it self, some of the Members of the same Ruddar being complain'd of, whilst others remain'd good and Servic[illegible] Sheathed. *Vid. pag.* 23. Therfore Lead-Sheathing is no wise concern'd in the extraordinary Decays of Bolts and [illegible]

And if this of Eating the Bolts and and Ruddar-Irons was the only Cause why Lead-Sheathing was at first laid [illegible] prov'd to be false and groundless, as by this Return from *Debtford* Yard alone, and the Evidence above drawn from ed to the Navy, unless the priuate Interest of the Shipwright and those that deal in the Materials of Wood-She[illegible] removed by the Navy-Board themselves, *upon sufficient Proof and Experience*, as above; and to raise any new o[illegible] especially since their Report which was made, after 12 years experience upon 20 Ships mention no other Complain[illegible] which certainly they could not then have omitted, if they had any thing Material more to say against it.

And after all, if what they had said had been true, it had not been worth speaking of, in respect of the vast [illegible] since the Bolt-heads and Braces may be safely secured by parcelling; and if they will say the Pintels and Gudgeon[illegible] at a Breakfast; the shortest time of their lasting upon the Lead-Sheathed Ships complained of, being [illegible] on Board, as was proposed, there not being wanting an Opportunity by Grounding, or Docking time enough [illegible]

An Accompt of the Decays, Shifting, and Repairs of Ruddar-Irons, Returned to the Navy-Bo[illegible]

* *Pearl.*	2 Pintels	10 *July* 71	*Castle Fire Ship.*	Ruddar Irons.	2 *Sept.* 72.	*Holmes.*	1 pintel.	
	Nails and Brads.			5 Pintels.			1 stirrup.	
	2 pint.mend.&Stra.leng	18		1 brace.		*Chatham Sloop.*	2 pintels.	
	1 Brace & Pint. mend.	19 *Nov.* 75		4 bolts.			1 brace for ruddar.	
	3 New pintels.			1 gudgeon.	15 *Mar.* 77		3 pintels mended.	
Francis.	1 pint.mend.&rud.Nail.	11 *July.*		2 New braces.			4 bolts for ruddar.	
Garnsey.	Brads to fast.Rud.Iro.	27 *Oct* 71.		2 Old braces mend.		*2 New Shallops.*	4 bolts } for ruddar.	
	5 Bolt. for Rud.&Wale.	16 *Feb,* 73		5 pintels mended.			3 bolts }	
	1 pint.&Gudg. mended.			2 bolts for the rud.	25 *Mar* 78		8 pintels.	
	3 New pintels.		*Aconm. Yat*	4 Pintels.	26 *Aug.* 72		4 braces.	
* *Const. War.*	2 New pint. & 2 bolts.	10 *Jan.* 71	*Leave Yat*	2 bolts for the rud.	24 *Sept.* 72		4 gud geons.	
	brads for Rud. Irons.		*Morlin ya*	1 brace for the rud.	13 *Nov.* 72	*Cha. Horsfbo*	3 Bolts for Ruddar	
	4 Bolts for the Rudar.	26 *Aug.* 75.	* *Drake.*	5 bolts for the rud.	12 *Nov.* 72	*Vulture Sloop.*	4 Bolts for Ruddar	
	5 Pintels.	2 *Sept.*		1 New Pintel.			1 New Pintel.	
	4 Bolts for the Rud.			3 pintels mended.			1 Pintel mended.	
*Garland.	Brads for Rud. Irons.	8 *Jan.* 71.		4 pintels.	14 *Apr* 74		4 Pintels mended.	
	4 Pintels mended.	15 *Feb.*		3 braces for the rud.	16 *Oct.* 78	*Prevention Sloop.*	4 bolts for Ruddar	
	Brads to fast.Rud. Iro.	5 *Mar.*		2 bolts for the rud.			1 brace.	
	1 Bolt for the Ruddar.	17 *Sept* 74		4 pintels.	*Jan.* 22.		3 pintels.	
	3 Bolts for Rud.& Keel.	1 *Dec.*		1 gudgeon.	7 7/8	*Hound Sl.*	2 bolts for ruddar.	
	4 Pintels.	18.	*Fortune Prize.*	6 bolts for the rud.	18 *Nov.* 72		1 New pintel.	
	2 New braces.			6 pintels mended.			2 pintels mended.	
	1 brace mended.		*Eaglet Ketch.*	4 New pint.& a col.	29 *Nov* 72		3 bolts for ruddar.	
Darm.	2 bolts for the Ruddar.	17 *Jan.* 71		1 brace mended.		*Soldados*	1 New pintel.	
	3 bol.for rud.&ring-pla.	18 *Mar.*		4 plates for ruddar.	13 *Dec* 72		3 Old pintels.	
	2 bolts for Ruddar.		*Centurian*	4 New braces.	23 *Dec* 72		5 bolts for ruddar.	
*Kath. Yat	3 Pintels Straps length.	14 *Jan.* 71.		1 gudgeon.			4 pintels.	
	1 New pintle.	9 *Feb.*		5 bolts for ruddar.	13 *Jan.* 7 2/3		4 bolts for ruddar.	
	3 Old pintels lengthn			6 bolts for Ruddar.	17.		4 bolts and 4 plates	
	brads to fast. Rud. Iro.			5 pintels.			4 pintels mended.	
	4 bolts for Ruddar.	1 *Nov.* 76.		brads to fast.rud. Ir.			2 bolts for ruddar	
	4 pint. and a gudgeon		*Vell Dog.*	1 Strap to rud. Ir.	1 *Feb.* 7 2/3		1 brace.	
	mended.		*Leopard Fire Ship.*	2 New pintels.	1 *Feb.* 7 2/3.	*Rich Yatch Royal Escape.*	3 bolts for Ruddar	
Portf. Frig.	4 Pintels.	25 *May* 72.		5 bolts for ruddar.			4 bolts for ruddar.	
	1 Lengthned.		*Lilly Dog.*	4 pintels mended.	6 *Mar.* 7 2/3.		3 pintels	
	2 Gudgeons.		*Tulip Dog.*	2 plates for ruddar.	6 *Mar.* 7 2/3	*William Doggar.*	6 bolts for ruddar.	
	Ruddar Nails.	3 *June.*	*Hope Galiot-boy.*	2 Ir. length. for rud.	17 *Mar.* 7 2/3		2 New pintels.	
	1 New brace for Rud.	12 *Nov.* 73		2 bolts for ruddar.			3 pintels mended.	
	5 pint.& 2 braces mend.		*Drang F.S.*	4 Rud.Irons length.	8 *Mar.* 7 2/3	*Adventure*	6 bolts for ruddar.	
Portf. Pink.	4 New pintels.	30 *May* 72.	*Adam and Eve.*	2 pintels.	17 *Mar.* 7 2/3		4 braces for	
	1 New brace.			3 bolts for Ruddar.			1 gudgeon.	
Foresight v. Pag. 31	Ruddar Nails.	5 *July* 72.	*Marig.F.S.*	4 bolts for Ruddar.	29 *Mar.* 73.		2 bolts for	
	3 bolts for Ruddar.	3 *Jan.* 7 3/3.	*Provi.F.S*	5 bolts for Ruddar.			5 pintels.	
	5 pintels mended.	19 *Aug.* 74	*Hare Dog Fanfan.*	2 bolts for Ruddar.	5 *Apr.* 73		2 bolts for	
	2 bolts for Rud.			1 New pintel.	8 *Apr.* 73		1 brace.	
* *Ann Yat.*	4 pintels.	17 *July* 72		2 Old pintels mend.		*Crown.*	1 brace.	
	2 bolts for the Ruddar.	1 *Nov.* 76.		6 bolts for Ruddar.	4 *Aug.* 78		1 brace.	
	4 pintles.			3 pintels mended.		*Fortune Fly-boat.*	5 bolts	
	3 braces.			bolt for the rud.	18 *Apr* 73		1 rudder	
	1 Gudgeon.		*Peterm.dog*	5 bolts for Ruddar.	18 *Apr.* 73	*Assurance.*	4 bolts	
Henrietta.	2 New pintels.	18 *July* 72	*Kath. F.S*	3 bolts for rud.&fca.			1 rudder	
	brads to fasten pintels.	30 *Jan* 7 2/3	*Roe buck.*	4 pintels.	15 *Apr* 73.		4 bolts for ruddar.	
Dove & Tulip Sh llop	3 bol.& 2 plat.for Rud.	12 *Aug* 72		3 bolts for Ruddar.			4 bolts for ruddar.	
				3 bra. & stir.mend.				

The Certificates abovementioned and other Evidence, with a particular Account of the ill [illegible] of this [illegible] the hard Usage of the Inventors from time to time, in favour of its Enemies, and by what Artifice and Interest the Progress thereof has been Obstructed, they may in due time be [illegible] the Reply for Satisfaction of the Publick, and those that dispose of their own Money.

[illegible] it; And the Suggestions of its extraordinary Eating the Bolts and Rudders [illegible] the Milld Lead Company's Reply to the late Navy-Boards Report to the Lords [illegible] and with the Proceedings relating thereto amongst other things, printed [illegible] Merchant-Men into the Dock after their several Voyages perform'd; Assert- [illegible] Objections if they had any before they went out, while their Sheathings might be [illegible] bear a fair and open Test.

[illegible] many ill effects, both from the thing it self, (by the damage to the Plank and [illegible] Charge of Graving and short duration, it being only an Entertainment for the [illegible] to purchase that, whilst our Lead which might be improv'd, much better for

[illegible] or cast Sheets, between Rollers, down to any degree of Thinness required; [illegible] Lead was not fit for, as in particular, this (as thin as a Shilling) for Sheathing of [illegible] that there wanted nothing but a Nail of an agreeable Mettle to fasten this Lead [illegible] 'd that the Lead eates the Iron) and having upon various Trials fix'd upon a [illegible] ness being no damage to the Plank, and by the roughness of the Shank (being [illegible] common Sense concluded at first sight, that this being Mettal which the Worm [illegible] justify d their expectation by Experience upon 20 Ships of the Royal Navy [illegible] both before and after their Voyages perform'd, as they have Certify'd; tho'

[illegible] ly approved thereof, encouraging the Inventors to get an Act of Parliament, [illegible] se that dealt in the Materials of Wood-Sheathing, having raised many Ob- [illegible] dawsers, and lying on the Ground, *&c.* the Navy-Board for abundant cau- [illegible] end, having Sheathed 10 Ships, within that time, most of which being re- [illegible] o. 1675, in a most solemn Manner, under the Seal of their Office, enter d [illegible] of their Act of Parliament; Declaring in the Preamble of their Contract, *ing and Preserving Ships against the Worm.*

[illegible] nd; but then it was, that the Shipwrights (who were not much concern d in [illegible] Merchants, where they Sheath at least 6 or 700 Ships a year, and in which a [illegible] me Venomous Quality in it, that did in a very extraordinary manner Eat [illegible] ad received Complaints of t at kind from abroad, which might be, and no [illegible], to take notice to their Commanders of their Ruddar-Irons, (especially if [illegible] g as others) and pretend that they were more than ordinarily eaten, that he [illegible] Business, the Captain may at length believe him, and so write home accord- [illegible] onstration, as the same must have appeared to that Navy Board upon an Oc- [illegible] *Reply*, if no other Evidence had appeared therein, and which they thought

[illegible] ngth obstinately Espous'd by that Navy-Board, the Milld Lead Company a- [illegible] 4. of their said *Reply*, offer'd to them (which they had done also to the Lords [illegible] from their several Yards, of all the Ruddar-Irons that had been put on, De- [illegible] that they had lasted as long upon Lead-Sheathed Ships as the rest, taking one [illegible] the Dispute; And being pressed therein, they did indeed at length issue out [illegible] tored the Lead-Sheathing to their deserv'd Approbation as above, when they [illegible] nough to have discovered this extraordinary Decay of the Iron-work, if there [illegible] ots have pleaded for their discontinuing it ever since; and thereby have saved [illegible] ly made out: a much better Service to the Publick, than their Report to the [illegible] t only.

[illegible] Suggestion any longer, they concealed it from the Company, pretend- [illegible] and so all further Enquiry fell; but this Return being afterwards discover'd,

[illegible] be false and groundless, as follows.

[illegible] Now together at first.

[illegible] rom *without*, the Lead-Sheathing, Wood-Sheathing, or no Sheathing being all [illegible] and Operation upon the Ruddar-Irons, and the Decays be constant to them- [illegible], that the Decays in the Iron-work of no two Ships of any kind, or even [illegible] soever.

[illegible] of the Ruddar-Irons *extraordinary Decay* must come from *within* the Body of [illegible] on, *Swedish*, *Spanish* and *English*, in the several Sorts of his Work, which [illegible] the less Mony (selling all by weight) he receives for it, and the longer his [illegible] es of Iron-work to be equally Good and Servicable, unless you can suppose [illegible] much as their difference is, must be the difference in their Duration.

[illegible] hips are very different and various from one another, and each one even from [illegible] by this Return they always did upon other Ships whether Sheathed or not [illegible] e than Wood-Sheathing or no Sheathing, which was to be prov'd.

[illegible] been discontinued in the Navy, that Objection being removed and fairly [illegible] ly demonstrated to be; what can hinder the Lead-Shearhings being restor- [illegible] pported at so vast a loss to the Publick, all other Objections being totally [illegible] the old Objections again, would be ridiculous, and deserves no Answer; [illegible] st it, but barely this of its supposed destructive Quality to the Iron-work

[illegible] Publick, as well as the small Charge to provide against it; as in *pag.* 42. [illegible] Water are eaten by the Lead-Sheathing, be it so, it does not Eat them up [illegible] s, as in *pag.* 42. it was but having a fresh Sett of Ruddar-Irons ready [illegible] had been occasion.

[illegible] rd, *for about* 8 *Years, by their Order of* 27 March 1679,

[illegible]	pintels.	19 *Jan.* 7 1/4		12 *Ditto* to fast. rud. Ir.	
[illegible]	pintels and collar.	14 *Jan.* 7 1/4.	*Emesworth Sloop.*	3 bolts for ruddar.	9 *Aug.* 78.
	3 bolts for ruddar:	16 *Jan.* 7 1/4	*Phœnix.*	3 New pintels.	
	4 pintels mended:			1 New pintel.	20 *Nov.* 78
	1 brace for ruddar.			4 pintels mended.	
	6 bolts for ruddar.	24 *July* 75.	*Larke.*	4 pitels } mended.	1 *Feb.* 7 7/8.
	2 braces mended:			3 braces }	
	4 pintels.			4 bolts for Ruddar.	22 *Jan.*
	7 bolts for ruddar.	27 *Feb.* 7 1/4		4 bolts for Stern p oft.	
	7 pintels.	27 *Mar.* 74	*Portf. Yat*	2 bolts }	
	5 braces.			2 plates } for Ruddar.	24 *Jan.* 7 3/8.
	2 gudgeons.			1 ring bolt }	
[illegible]	3 pintels.	24 *Apr.* 74			
	1 brace for ruddar.		71 Ships in all.	Mark'd * were again Repair'd here.	
	3 bolts for ruddar.	5 *Jun.* 75			
	4 pintels mended.	18.			
[illegible]	2 Rud.Irons length.	16 *May* 74		Weight of the Iron o-	
[illegible]	2 bolts for ruddar.	3 *Sept.* 74		mitted, as unnecessary	
[illegible]	1 brace mended			to shew its duration.	
	2 pintels mended.				
	1 new brace.				
F. S.	4 rud. Irons length.	6 *Feb.* 74.			
[illegible]	3 pintels	26 *Mar.* 75			
[illegible]	2 braces mended.				
	1 New brace.				
	4 bolts for ruddar.				
	1 pintel mended, &				
	1 pintel new.				
	5 pintels mended.	20 *Apr.* 78			
[illegible]	3 bolts for ruddar.	3 *June* 75			
	6 bolts for ruddar.	10.			
	1 new brace.				
	4 new pintels.				
[illegible]	1 new pintel.	31 *Mar.* 76			
	3 pintels mended.				
	5 New pintels.	5 *April.*			
	2 pintels mended.				
	7 bolts for ruddar.	15:			
[illegible]	A Suit of Rud.Ir.	5 *Sept.* 76			
[illegible]	4 bolts for ruddar:	25 *Oct.* 76			
	5 pintels mended.				
	2 ruddar Irons.	11 *Nov.* 76			
[illegible]	3 bolts for ruddar.	5 *Jan.* 7 2/3.			
	2 bolts for ruddar.	27 *Aug* 78			
[illegible]	1 New brace.	4 *Apr.* 78.			
[illegible]	1 pintel mended.				
[illegible]	5 bolts for ruddar.	8 *May* 78			
	2 gudgeons.	11.			
	3 braces for ruddar.	18.			
	12 Straps for rud.Ir.	21.			
	Ruddar Nails.				
[illegible]	2 pla. & bol. for rud.	11 *June* 78			
	2 pintels.				
	36 squa.Stap.for rud.				

An Abstract of the Ruddar-Irons of the Ships abovementioned, that return'd into Debtford *Yard to be Repair'd, mark'd *. the rest being supposed to be Repair'd in some other Yard, whereby, however the great Variety of the Ruddar Irons Decays may appear, tho' their Duration only from these.*

Ships Names	When put on, or men.	When Shift. or Repair.	Time of last	
			Yr.	M
Pearl,	*July* 1671	*Nov.* 1675	4	4
Const. War.	*Jan.* 1671	*Sept.* 1675	3	8
Garland.	*Jan.* 1671	*Dec.* 1674	2	8
Kath. Yacht	*Febr.* 1671	*Nov.* 1676	4	9
Portf. Frig.	*May* 1672	*Nov.* 1673	1	6
**Foresight*	*Jan.* 1671	*Aug.* 1674	1	7
Ann Yacht	*July* 1672	*Nov.* 1676	4	4
Castle Fire S.	*Sept.* 1672	15 *Mar.* 77	5	6
Drake.	*Nov.* 1672	*April* 1674	1	7
		Jan. 167 7/8	3	9
Fanfan	*April* 1673	*Aug.* 1678	5	4
Chath. Sloop.	*June* 1673	*July* 1677	4	1
Soldados	*Sept.* 1673	*June* 1675	1	9
		Sept. 1678	3	3
Kitchin Yacht	*an.* 167 3	*July* 1675	1	6
Debtf. Ketch	*April* 1674	*June* 1675	1	2
Quaker Ketch	26 *Mar.* 75	*April* 1678	3	1

* This Ship was Sheathed with Lead in *August* 1674, when her Ruddar-Irons lasted about 5 Years. *Vid. Reply.* Pag. 31.